C1

battery does not function. Considering these points, currently commercialized lithium secondary batteries with the graphite-group used for negative electrode materials frequently use electrolytic solution containing ethylene carbonate. However, the melting point of ethylene carbonate is 37°C higher than room temperature. Therefore, at low temperatures, ionic conductivity of the electrolytic solution for lithium ions plummets, lowering ~~charge/discharge priorities.~~

Please replace the paragraph beginning at page 4, line 17:

C2

When inorganic compound materials such as TiS2 are used as a negative electrode active material, intercalation and de-intercalation of lithium occur at sufficiently more precious potentials compared with lithium metal and lithium alloys. Thus, even when the negative electrode active materials come in contact with the electrolytic solution, reductive decomposition does not occur. Moreover, even when propylene carbonate is used for the electrolytic solution, intercalation and de-intercalation are not impeded by decomposition as is the case with the graphite materials, therefore, a wider range of electrolytic solutions is applicable. However, potentials of the negative electrode using the foregoing inorganic compound materials is precious, causing voltage of the battery to inevitably become low. This is a disadvantage of achieving higher energy density.

Please replace the paragraph beginning at page 10, line 12:

C3

As a conductive material for the negative electrode, any electronic conduction materials can be used. Examples of such materials include graphite materials including natural graphite (scale-like graphite), synthetic graphite and expanding graphite; carbon blacks such as acetylene black, Ketzen black (highly structured furnace black), channel black, furnace black, lamp black and thermal black; conductive fibers such as carbon fibers and metallic fibers; metal powders such as copper and nickel; and organic conductive materials such as polyphenylene derivatives. These materials can be used independently or in combination. Among these conductive materials, synthetic graphite, acetylene black and carbon fibers are especially favorable.

Please replace the paragraph beginning at page 12, line 12:

C4

Conductive materials for the positive electrode can be any electronic

conductive material on the condition that it does not chemically change within the range of charge and discharge electric potentials of the positive electrode materials in use. Examples of such materials include graphite materials including natural graphite (scale-like graphite) and synthetic graphite; carbon black materials such as acetylene black, Ketzen black, channel black, furnace black, lamp black and thermal black; conductive fibers such as carbon fibers and metallic fibers; fluorinated carbon; metal powders such as aluminum; conductive whiskers such as a zinc oxide and potassium titanate, conductive metal oxides such as a titanium oxide, and organic conductive materials such as polyphenylene derivatives. These materials can be used independently or in combination. Among these conductive materials, synthetic graphite and acetylene black are especially favorable. The total amount of the conductive materials to be added is not specifically defined, however, 1-50wt%, especially 1-30% of the positive electrode materials is desirable. In the case of carbon and graphite, 2-15 wt% is especially favorable.

C4

Please replace the paragraph beginning at page 25, line 13:

Subsequently, a solution comprising a mixed solution of ethylene glycol dimethacrylate and polyethylene oxides of molecular weight of 10,000 or less, the organic electrolytic solution, the same as that of the first preferred embodiment, a photo-polymerization initiator and a polypropylene filler, used as a structural reinforcement, is cast on the positive and the negative plates. Ultraviolet lights are then irradiated onto the electrode plates in an argon atmosphere. In this manner, the material with the foregoing composition is photo-polymerized directly to form a gel electrolyte layer (PMMA-PEO) on the surfaces of the electrode plates, which are then laminated.

C5

Please replace the paragraph beginning at page 26, line 1:

Fig. 2 shows a vertical cross section of a cylindrical battery of the present invention. The positive electrode plate 15 and the negative electrode plate 16 are spirally rolled a plurality of times via the separator 17, and placed in the battery casing 11. Coming out from the positive electrode plate 15 is a positive electrode lead 15a, which is connected to a sealing plate 12. In the same manner, a negative electrode lead 16a comes out from a negative electrode plate 16, and is connected to the bottom of the battery casing 11. Insulating gasket 13 separates sealing plate

C6

12 from battery casing 11.

Please replace the paragraph beginning at page 26, line 16:

C7

Insulating rings 18 are disposed on the top and the bottom of an electrode plate group 14. A safety valve can be used as a sealing plate. Apart from the safety valve, other conventionally used safety elements can be adopted. As an anti-overcurrent element, for example, fuses, bimetal and PTC elements can be used. To deal with increases in internal pressure of the battery casing, a cut can be provided to the battery casing, a gasket cracking method or a sealing plate cracking method can be applied, or the connection to the lead plate can be severed. As other methods, a protective circuit incorporating anti-overcharging and anti-overdischarging systems, can be included in or connected independently to a charger. As an anti-overcharging method, a system to cut off a current by utilizing an increase in internal pressure of the battery is used. In this case, a compound that raises internal pressure can be mixed with the composites or with the electrolytes. Such compounds include carbonates such as Li2CO3, LiHCO3, Na2CO3, NaHCO3, CaCO2 and MgCO3.

Please replace the paragraph beginning at page 27, line 21:

C8

Subsequently, 2wt% of PTFE is added to 98wt% of the solid electrolyte powder and mixed thoroughly in a mortar to make it elastic. The elastic body is then pressed and rolled by a roller, and a solid electrolytic sheet is obtained.

IN THE CLAIMS:

Please replace claims 1-9 with the following amended claims:

C9

1. (Twice Amended) A non-aqueous electrolyte secondary battery comprising:

a positive electrode,

a negative electrode capable of intercalating and de-intercalating lithium,

a non-aqueous electrolyte solution, and

Sub D1